

ART. XIII. *Anatomie Pathologique du Corps Humain, ou Descriptions, avec Figures Lithographiées et Coloriées, des Diverses altérations Morbides dont le Corps Humain est susceptible.* Par J. CRUVEILHIER, Professor d'Anatomie, à la Faculté de Médecine de Paris; Médecin de la Maison Royale de Santé; Chevalier de la Légion d'Honneur; Membre de la Académie Royale de Médecine; Président perpétuel de la Société Anatomique, &c. Quatorzième Livraison, et 14, liv. bis. *Maladies de l'estomac et des Intestins. (CHOLERA MORBUS.)* pp. 52, folio. Plates 5.

THE appearance of the fourteenth Livraison of the magnificent work of M. CRUVEILHIER\* affords us an opportunity we have long desired, of presenting to our readers an account of the researches of the anatomico-pathological school relative to cholera. Though far from subscribing to the peculiar doctrines of that school, we attach a high value to the labours of its disciples. They are perhaps unrivalled in the minuteness and care with which they conduct post mortem examinations; and the observations which they are now industriously collecting, will constitute the most precious materials for the construction, by others, of an enduring system of medical doctrine. It is not by them, however, that such a system can be erected; the foundation upon which they are attempting to raise their superstructure is unsound. They have attempted to introduce into pathology the mode of classification adopted in natural history, and seem to think that they will thus invest the one with the precision and certainty of the other. The characters presented by morbid structures offering the only foundation for such a classification; they have endeavoured to arrange diseases according to the alterations found in the structures after death. Their pathology is founded directly upon anatomy, and the morbid lesions discovered on post mortem examination have thus assumed a predominant importance. But these lesions are not the disease, they are merely the results of disease—they are the products of derangement of the functions, and it is this derangement of function which constitutes disease, and against which our remedies are to be primarily directed. Hence it is upon physiology that pathology must be immediately based, and morbid anatomy cannot be correctly studied except through the medium of physiology.

From their mode of viewing disease, it has become a fundamental

\* This work was commenced upwards of five years since, but after reaching the eleventh No. its publication was stopped. It has recently been recommended, and we trust will be continued uninterrupted to its completion.

maxim of the school just alluded to, that every organic alteration not constantly *observed* after a disease, cannot be considered as an essential part of that disease. Now while we are disposed to admit, that no derangement of function can exist without some change of structure; it is a fact which cannot be disputed, that this alteration may be sufficient to occasion death, and yet our most careful investigations fail to detect it on post mortem examination. Such cases, and they are numerous, though their number has been exceedingly reduced by the modern improved methods of examination, can never enter into the system of the pathological anatomists. But what is worse is, that with them the exception makes the rule. Thus, in any disease, although in ninety-nine cases out of a hundred, a certain organ is always found diseased, yet if in the hundredth, no lesion of it is discovered after death, it is at once adopted as a rule, that derangement of that organ is not essential to the disease; and this, although the functions of the organ may have been manifestly disordered during life, and no lesion be discoverable in any other organ to account for death.

We will not at present dwell further on this subject; but these few remarks seem necessary, both because the doctrines of the anatomico-pathological school are not well understood in this country, and still more because an adoption of them would be a complete bar to any correct general conclusions relative to the pathology of cholera.

It is only necessary further to remark that M. Cruveilhier is a member of the anatomico-pathological school. He appears however to be awakening to the errors of that school, and he unquestionably may be ranked among the most distinguished pathologists of the day. His great work of which the fourteenth number is now before us, stands unrivalled in the beauty and accuracy of its illustrations. This number is devoted to the consideration of cholera morbus, and contains five folio plates representing the appearances exhibited by the stomach and intestines of those who die of that disease.

To arrive at a correct knowledge of the nature of cholera, it is not sufficient to study the most severe cases—those which prove fatal in a few hours. From such cases little comparatively is to be learned. To obtain a full and correct view of the disease, it is necessary to investigate, 1st, the epidemic influence in its mildest effects, and when not productive of cholera; and next, the disease in its various grades. This M. Cruveilhier has done. He commences his work with some general considerations relative to cholera morbus, and then treats in succession of the pathological anatomy, the pathological physiology, and the therapeutics of the disease. His general considerations embrace four heads, 1st, the epidemic influence in its mildest

effects, and not productive of cholera; 2d, choleric diarrhoea; 3d, mild cholera, (*cholera moyen*,) 4th, violent cholera, (*cholera très grave*), with or without asphyxia.

That so few persons in Paris entirely escaped the epidemic influence, is attributable in part M. C. thinks to circumstances foreign to the medical constitution. The anxiety and fear, kept up by the perusal of the daily papers; the multiplied, frequently absurd and often injurious precautions taken to protect from the disease; the preventive remedies devised by charlatanism and adopted by credulity; the exclusively heating diet recommended officially, and rigidly employed by those even who had for years been accustomed to an opposite diet, all he thinks favoured the extension of the disease. Another circumstance which did not a little contribute to the same result, was the popular instructions for the treatment of cholera generally distributed, so that every family was provided with drugs, and thought themselves competent to apply the remedies at the onset of the disease.

"I cannot" says M. C. "relate here all the cases, in which on the slightest uneasiness, on the occurrence of a spasm often caused by fright, the whole family in alarm, surrounded the supposed patient with bags of hot sand, overwhelmed him with blankets, and excited excessive sweats by the vapour produced by pouring vinegar upon hot bricks; whilst at the same time peppermint, ammonia, simple or camphorated ether, or laudanum were administered internally, with the temerity of ignorance, so that when the physician was called, he experienced some difficulty at first in distinguishing this factitious from a real disease. The cessation of these incendiary measures did not always suffice to dissipate their effects."

The epidemic influence aided by the various other influences, to which allusion has been made, manifests itself by different phenomena, according to M. Cruveilhier. Sometimes by nervous symptoms, as vertigo, lassitude, cramps, &c.; sometimes by a *febrile paroxysm* of twenty-four or forty-eight hours duration, &c. The occurrence of preternatural vascular action at the commencement of an attack of cholera, has also been observed by Greenhow\* in some cases, and we have ourselves met with it in one or two instances. M. Cruveilhier agrees with the most careful and accurate observers, that it is the digestive functions which most frequently manifest disorder. Epigastric uneasiness, spasms of the pharynx or oesophagus, anorexia, vomiting, bilious diarrhoeas, nausea, borborygmy and colics were never more common than during the prevalence of the epidemic. Great irritability of the gastro-intestinal mucous membrane was manifested

\* Cholera as it recently appeared in Newcastle and Gateshead, p. 13.

by the violent action of the mildest purgatives, and the difficulty in curing many cases of gastritis and enteritis, apparently slight; and also their tendency to return on the slightest imprudence in diet.

"Obliged to give, at the hospital *à la Maternité*," says M. C., "purgatives in certain puerperal diseases, I found half an ounce of the mildest castor oil produce superpurgation." p. 3.

In some cases the epidemic influence was exerted principally upon the stomach, inducing *irritation* of that organ. This was manifested, according to M. C., by a sensation of heat, with increase of sensibility or simply uneasiness at the epigastrium, increased on inhalation, so that the patient could not draw a full breath. This was attended with heat and pain, or uneasiness along the oesophagus and pharynx; thirst, with desire for acid and cold drinks. The smallest quantity of liquid taken into the stomach, produced a sensation, as if lead had been swallowed; at the same time there was constipation, nausea, efforts to vomit, &c. General bleeding, leeches to the epigastrium, baths, abstinence from drinks, iced seltzer water, or small portions of ice *alone*, succeeded best in relieving these symptoms. M. C. notices another and more intense form of this gastric irritation, and which he describes as manifested by constant anguish, of which the epigastrium was the centre, and which sometimes extended the whole length of the oesophagus, and at others around the base of the thorax; with vomiting, excited by the slightest motion, or by the ingestion of the smallest quantity of drink.

In other cases the small intestines were principally affected by the epidemic influence. The symptoms here, were colicky pains at the umbilical and hypogastric regions, of more or less intensity, and either continued or intermittent; sometimes disgust for food, constipation, in some cases febrile action at night, &c. When these symptoms were not arrested, the irritation extended to the stomach and large intestines, and proved fatal. On post mortem examination, the gastro-intestinal mucous membrane was found extensively reddened.

In a third class of cases the epidemic influence was particularly directed to the large intestines, and manifested itself by bilious diarrhoea, and was in general more readily cured than the preceding.

"In an immense majority of these cases," says M. C., "diet, rice-water, baths, sedative enemata, sedative potions and leeches to the anus effected a cure." p. 4.

"Finally," he adds, "many individuals previously affected with the grades of irritation known by the name of chronic gastritis and enteritis, have suffered from an aggravation of the symptoms, which must be attributed, in great part, to the alterations in their diet."

M. Cruveilhier justly maintains that no diarrhoea should be considered as choleric, unless it is liquid, nearly inodorous, and resembling turbid whey, or rice-water with some grains floating in it. The choleric stools are, however, always preceded by discharges of fecal or imperfectly digested matters. M. C. does not consider the complete absence of the colouring matter of bile as essential to characterize the choleric stools, it is sufficient that they are watery and flocculent. In some cases he asserts, that the secretion of bile appears as much augmented as the intestinal secretion. The excessive abundance of the choleric stools, in many cases, are noticed by M. C., and he states that they are sometimes attended with *griping* and *colic*. (p. 4.) He considers opium as a specific in the treatment of these cases; and states that he has met with very few choleric diarrhoeas which have resisted this remedy when properly administered. He prescribes it, 1st, in the form of enema, ten or twelve drops in a little starch repeated every two or three hours; 2d, a potion, consisting of cinnamon water, mint water, orange-flower water, syrup of ether, of each half an ounce; laudanum, twenty-five drops, a spoonful every hour; 3d, for drink, rice-water with gum Arabic, in small quantity, or the white decoction without cinnamon.

The *temperature* of the enemata and drinks, M. C. considers as a fundamental point in the treatment, and he states that cool or even cold drinks and enemata have been attended with a success, which has often astonished him. In our number for November last, p. 172, we were led by our pathological views of the disease to recommend cold enemata, and we are happy to have their utility confirmed by the experience of so careful an observer as M. Cruveilhier. He states that he was led to their employment by chance. In a case of sporadic cholera, in which opium had failed, the patient having experienced a sensation of burning, whenever a warm enema was given him, took one of cold water, and the diarrhoea was instantly checked. M. C. states that he is also indebted to chance for a knowledge of the efficacy of very warm enemata. One of his patients, who was affected with a marked choleric diarrhoea, took an enema which produced a sensation of burning, followed by a complete cessation of the diarrhoea.

"With the opium and cold enemata may be associated," says M. C., "in a great many cases, leeches to the anus or over the course of the colon, as employed by M. Broussais, emollient baths, emollient cataplasms, and sometimes abstinence from all drinks."

M. C. employs general blood-letting only when particularly indications demand it.

Choleric diarrhoea may become chronic and degenerate into ente-

ritis, or it may change into cholera. The first is to be treated by the ordinary remedies for diarrhoea and enteritis, as leeches, emollient baths, opiate draughts and enemata, cold enemata, sinapisms to the lower extremities, and sometimes to the abdomen, rigid diet, the white decoction without cinnamon, as the sole article of drink and food.

M. C. is of opinion, that there are three forms of choleric diarrhoea; one which will not degenerate into cholera, another which is only the precursor of cholera, and which runs into it in spite of every remedy; and a third, which may be readily cured, but degenerates into cholera by errors of diet, or when neglected. The two first M. C. admits to be very rare, and only exceptions to the rule; and he says that when a choleric diarrhoea has been cured, we may in general flatter ourselves that we have prevented an attack of cholera. He further adds, that he has never seen a case of choleric diarrhoea properly treated from the commencement, which had degenerated into cholera.

Between the most severe cases of cholera, those which tend directly to destroy life, and choleric diarrhoea, many cases of intermediate severity occur, which M. C. describes under the term of mild cholera, (*cholera moyen.*) Of this class of cases, some have a tendency to get well under a rational and simple treatment, and others with an appearance of great mildness, are really extremely dangerous, and proceed to the extinction of life in spite of all the efforts of art. M. C. therefore, considers mild cholera as being sometimes a less severe form of violent cholera, and at others, as the first stage of the most violent form.

Mild cholera, he states, commences like every other grade of cholera, almost constantly by a more or less protracted, and more or less considerable choleric diarrhoea, which suddenly becomes aggravated from improper diet, &c. The change of choleric diarrhoea into cholera, is announced by vomiting, painful cramps of the extremities, violent thirst, epigastric distress, change of countenance, sunken eyes, feeble voice, disposition to coldness, sinking of the pulse; all symptoms indicative of the disease being no longer local, but that the nervous centres are simultaneously and deeply affected. These do not, however, all present themselves in every case; there is almost always a predominance of one or other of them; and several of them are frequently entirely absent.

Thirst, epigastric distress, alteration of the countenance, weakness of the pulse, feebleness of voice, suppression of urine, and a disposition to coldness, are the constant symptoms. Evacuations from the

bowels are, in some rare cases, wanting, M. C. states, and he considers their absence as a bad sign, justly remarking, that—

“It denotes not a suppression of the flux, but simply a want of excretion of the secreted fluids. It is easy indeed to verify the presence of fluid in the intestines, by pressing upon the abdomen, which produces a gurgling sound, similar to that from a partially filled barrel; or better by percussion of the abdomen, which yields a peculiar sound, indicating the excess of fluids over the gases. *There is often tenesmus, as in dysentery;* and bloody stools are not infrequent.” p. 11.

M. C. has also seen cholera insensibly replaced by dysentery, showing, he remarks, the affinity between the two diseases.

Vomiting, M. C. represents, as well as all other writers, as being sometimes the predominant symptom; he has rarely seen it entirely absent. It is not however very unfrequently absent, as might be shown by a host of evidence.

The suppression of urine, M. C. has found a constant phenomena. He considers it with the best pathologists, as resulting from the physiological law, by which the secretions mutually replace one another. Its reëstablishment is an unequivocally good sign. Cramps, M. C. states to be one of the least, and *epigastric distress the most constant symptom of cholera.*

Mild cholera when it does not run into cholera asphyxia, presents according to M. C. two marked periods, 1st, that of *concentration*, and 2d, that of *réaction*. The *réaction* may be incomplete or temporary, and may become fatal.

“The adynamic or typhoid state often, says Mr. C. replaces the choleric. The patients may also resist these consecutive phenomena; but some of them die, and on examination after death, *unequivocal signs of inflammation of the gastro-intestinal mucous membrane are found.* This adynamic or typhoid state which has destroyed so many patients supposed to be convalescent, has been common to all the forms and all degrees of cholera, from simple diarrhoea to algid cholera. It has been especially fatal to aged persons, to valetudinarians, and those who had previously laboured under chronic gastritis and enteritis. It has also appeared to me that a stimulating treatment too long continued, may after having appeared to resuscitate life, favour this termination.” p. 13.

M. C. quotes several cases illustrative of this form of cholera, and of the treatment he pursued in it.

The most violent grade of cholera presents itself in two forms. In the first the patient is of a blue colour, as in cyanosis or in asphyxia from carbonic acid gas; in the second the patient does not exhibit that colour. The first form usually proves fatal in a very short time, and has been termed blue cholera, cholera asphyxia, and algid cholera. In the second form, which is not less violent, although it is not so ra-

pidly fatal, the countenance is as much changed, although not of a blue colour; and the contractions of the heart propel the blood to the extremities of the circulatory system. The chemical phenomena of respiration are also partially performed, and the coldness of the body is not algid. M. C. designates this form, by the name of very violent cholera without asphyxia.

It seems to be still doubted by writers, whether cholera is always preceded by what have been termed premonitory symptoms. Most of the writers, and especially those who have had the most extensive means of observation, and have investigated the subject most carefully, assert that it almost invariably is, and M. C. is of the same opinion. He states that "it is excessively rare for the most violent grade of cholera to commence without premonitory symptoms."

"I know," he adds, "that many persons have been seized with the most violent symptoms, whilst engaged in their ordinary occupations, on a journey, or during a walk; but in general the first symptoms come on at midnight or towards morning, after a quiet sleep; but on inquiry I have almost always ascertained that the invasion of the cholera had been preceded for several days by a more or less marked derangement of the digestive functions. It is important here to remark, that in proportion to the length of time that the premonitory symptoms have continued, even when slight, and especially where they have alternately increased and diminished, the more sudden and overwhelming will be the disease. It is perfectly intelligible, that a lesion which has been long preparing, must when it takes place produce more violent effects, than one which occurs suddenly without antecedents."

The symptoms of cholera asphyxia have been so frequently detailed, that it is not necessary here to notice M. Cruveilhier's account of them, especially as he has offered nothing new on the subject. There is one remark, however, respecting convalescence, which strikes us as just, and is worth repeating. M. C. states that he has never seen rapid convalescence from a very marked choleric state; but that all the patients he has seen have had a more or less troublesome recovery. He therefore thinks it probable, that the cases of algid cholera reported as rapidly cured, were really mild cases, which presented an appearance of violence from the presence of spasms.

Violent cholera without asphyxia, affects less immediately the principle of life, and is more in the power of therapeutic agents. Reaktion so rare, at least in a decided degree, in cholera asphyxia, is in this form more or less completely established. In both forms however, M. C. considers reaktion essential to recovery; but there are some forms of cholera so intense that reaktion cannot be excited by any means. In this form of cholera, death occurs as frequently, though not as promptly as in cholera asphyxia.

M. C. next gives us a summary, of the appearances presented in the different organs, after death from cholera, but as we have dwelt upon this fully in a former number, and as M. Cruveilhier's observations are in accordance with what we have already given, we shall proceed at once to his analysis of the symptoms of the disease.

Cholera asphyxia he remarks, appears at first to be incapable of analysis; innervation, circulation, and respiration are simultaneously and profoundly affected; life is menaced at its source, as if the patient was under the influence of a deleterious agent: he presents all the symptoms of poisoning: he dies asphyxiated. But if in place of studying at once cholera in its most violent form, we view the disease in all its grades, if we pass successively from choleric diarrhoea to slight cholera, to moderate cholera, and finally to cholera asphyxia, we shall be insensibly led to establish the most probable source of the symptoms, and their connexion.

"Now the affinity which exists between choleric diarrhoea and cholera, is an incontestable fact; we have seen indeed, that if a certain number of persons be suddenly attacked with the most severe symptoms, cholera still more frequently commences by a choleric diarrhoea neglected, or badly treated."

We ought therefore to consider choleric diarrhoea as the first degree of cholera—as cholera in its least severe form. But the choleric diarrhoea is nothing else than an intestinal flux, a serous and mucous diarrhoea, which is *very analogous to that which results from super-purgation*. This diarrhoea which is accompanied so often by tenesmus and colics, brings on almost immediately, when it is very abundant, a considerable emaciation, a complete prostration of strength, weakness of the voice, tendency to coldness, and light cramps; all of which symptoms are too evidently a consequence of the sudden concentration of the vital forces upon the intestinal canal, and the loss of substance by alvine evacuations, for it to be necessary to establish their correlation.

In choleric diarrhoea, M. C. justly regards the disease as local, whilst in cholera the system participates in the lesion.

We have elsewhere maintained the analogy which exists between the symptoms of cholera and those produced by the acrid poisons, and we are happy to adduce the experience of M. Cruveilhier in our support. This analogy has been noticed by Morgagni, and almost every writer since his time, and emphatically pointed out by Christison in his valuable work on poisons. As the resemblance has, however, been denied by a writer in the present number of this Journal, (p. 412,) we shall quote M. Cruveilhier's own words.

"The study of the phenomena resulting from poisoning by arsenic, appears to me to throw the greatest light upon cholera; as soon as the poison has touched the gastro-intestinal mucous membrane, local symptoms appear, which denote a violent irritation of this membrane, and general symptoms, by which the severe blow which is carried to the vital forces is revealed; *for the local and general symptoms of poisoning have the greatest analogy to those of cholera*; in both cases, there are cramps, epigastric distress, oppression, hiccoughs, vomitings, extinction of the voice, smallness or cessation of the pulse, coldness of the surface of the body, sometimes carried even to icy coldness. Called to an individual who was suddenly taken with the symptoms I have just described, and who would make no confession, I informed the attorney of the king, that if the disease was not cholera, the patient had been poisoned; he died in my presence, about three hours after the attack of these symptoms. On opening the body, we found in the stomach fragments of arsenic.

"Observe also strangulated hernia: an inch of the circumference of the intestine is pinched; immediately appear hiccoughs, vomiting, depression of the pulse, extinction of voice, all the symptoms which denote a profound lesion of the nervous visceral system; and the patients sink under these nervous symptoms when the local lesion is very slight.

"The more I reflect, on the one hand, upon the succession of the phenomena in the greater number of cases of cholera, on the other, upon the effects of a rapid concentration of innervation, and of fluids upon a surface so sensitive and so vascular as the intestinal mucous membrane, the more I am justified in seeing in this concentration, in the serous and mucous diarrhoeas which follow it, the most general fact that can be arrived at by the observation of the symptoms, and by pathological anatomy; and without pretending to explain by it all the symptoms, it will suffice us to establish a correlation between this diarrhoea and the incomplete and gradual asphyxia, the unquenchable thirst, the precordial anxiety, the vomitings, the hiccoughs, the cramps, and in fine, the diminution of the beatings of the heart, whose contraction reduced to a simple quivering, no longer throws the blood into the large vessels. It appears to me impossible to point out the limit which separates the cases where the disease is purely local, and suits itself to the state of equilibrium of all the functions, from those where the equilibrium being destroyed drags with it all this train of formidable symptoms. It is sufficient for us to prove the fact of this rupture of the equilibrium of innervation, a rupture which we find in all severe diseases, and which ought to vary prodigiously according to individuality and a thousand other circumstances."

M. Cruveilhier seems not to have arrived at sufficiently clear or precise views, relative to the pathological condition of the gastro-intestinal mucous membrane in cholera. He states that pathological anatomy appears to him to have demonstrated that cholera morbus does not essentially consist in an inflammatory fluxion, or phlegmasia of the gastro-intestinal mucous membrane, unless, he adds, the sero-mucous fluid, which constitutes the choleric stools, be considered as sufficient to characterize inflammation in the absence of all colora-

tion and injection of the mucous membrane which he does not. Now, M. Cruveilhier himself, admits that there is a fluxion to the gastro-intestinal mucous membrane, and the absence in some cases, of all redness of that membrane is explained by the excessive secretion, the arteries being in a state of excessive action, pour out immediately by their exhalants, a portion of their blood, and force into the veins the remainder. M. Cruveilhier also admits, that the inflammation of the serous membranes may be adduced in support of this opinion, since inflammation is characterized in them by the presence of a product of sero-purulent secretion, without any coloration of these membranes; though he thinks that the analogy will not hold, in consequence of the difference of texture and vitality of the two tissues. But the existence of fibrine in the secretions from the intestinal mucous membrane in cholera, detected by Christie, Thompson, and O'Shaughnessy, an undoubted product of inflammatory action, is conclusive to our minds; and M. C. admits, that there is the greatest analogy between the fluxion to the intestines in cholera, and that which constitutes inflammation.

"Anatomy and pathological physiology," he states, "unite in demonstrating in a manner not less peremptory, the *great affinity* which exists between the mode of fluxion to the intestines, which results in the sero-mucous secretion of cholera, and the mode of fluxion which constitutes inflammation; so much so, that many individuals who die of cholera after reäction, exhibit unequivocal traces of inflammation. Cholera considered in an anatomico-pathological point of view, and with respect to the intestinal canal, *must then be arranged in the great class of irritations.*"

This, it appears to us, is admitting all that can be demanded, and all that we have ever contended for, viz. that in cholera, there is an active fluxion to the intestinal canal, in some cases causing excessive secretion, in others attended by ordinary inflammation.—(See the November No. of this Journal, p. 168.) M. Cruveilhier has overlooked the fact, that the blood-vessels of the gastro-intestinal mucous membrane perform two distinct functions; that one set of vessels are appropriated to secretion, and another to nutrition, and that it is these last which are concerned in inflammation. When the former set of vessels are in a state of excessive activity, they appropriate to themselves all the blood determined to the mucous membrane, pour out a portion of it into the intestines, and throw the rest into the veins, which last thus become engorged. But when the secretions are not so excessive as to prove a complete drain, the surplus blood is received by the nutritive vessels, and we have the phenomena of ordinary inflammation; further, when the secretions are wholly suppressed with-

out the afflux to the intestines being diminished, we have all the blood determined to the nutritive vessels, with the natural results—a violent gastro-enteritis.

The indications of treatment, according to the views of M. Cruveilhier, are to resuscitate life during the period of concentration; to direct the reäction, and to dissipate the fluxionary disorders which succeed the terrible struggle of the vital forces against the morbid cause.

Among the measures calculated to assist in inducing reäction, M. C. appears to consider frictions to the skin as useful. He says that at first they were abused; and subsequently, without sufficient reason, completely renounced. *Heat*, he remarks, was borne by patients with great impatience, that their skin remained icy cold in the midst of hot vapour; that when the heat was continued, the oppression and distress was aggravated; and that many practitioners therefore renounced them. In this city similar effects were observed to follow their use.

M. C. has not used ice externally, except to fulfil certain indications. He has found that when applied to the epigastrium, it sometimes arrests the vomiting and relieves the distress in that region; and that frictions with it upon parts affected with cramps, sometimes arrest that affection.

Every possible means of irritating the surface seems to have been tried, with little apparent advantage; M. C. thinks, however, that a strip of blister, the whole length of the spine, was somewhat useful. Baths of all kinds have failed to produce any marked benefit; M. C. however, is of opinion, that local vapour douches might be employed in some cases with advantage.

M. Cruveilhier thinks that moderate diffusible stimuli are useful. But, he remarks, that—

"All experience has proved, that if stimulants in small doses are useful in the period of concentration to revive life, when too long continued, or when given in too large doses, they may be injurious. We should never forget, in the administration of stimulants, that in cholera there is a fluxion to the mucous membrane, and that there is imminent danger of inflammation in the period of reäction."

The stimulant he recommends is the following:—R. Cinnamon water, mint water, Syrup of ether, aa.  $\frac{7}{3}$ j.; Acetate of ammonia,  $\frac{3}{3}$ j. To be taken in spoonful doses.

Experience does not justify, M. C. states, the use of bark.

Opium, he says, so efficacious in choleric diarrhoea and mild cho-

lera, is counter-indicated in cholera asphyxia, by the apparent comatose condition of the patient.

"Given in large doses in the period of concentration, it has appeared to oppose reäction, or to plunge the patients into a state of coma, in which they expired. Nevertheless, I have not, in any case, entirely neglected their use: my object in giving them was to diminish the intestinal secretion, the existence of which I admit, although the product was not always discharged externally."

The preparation of opium preferred by M. C. is the theriac or diascordium. Musk, camphor, and castor do not appear, he says, to have fulfilled the expectations of practitioners. He has not used the extract of rhatany, but he says that many respectable practitioners assert it to have been useful.

Of emetics, M. C. does not appear to have had any personal experience, but he states, that they do not appear to have been as useful as their advocates proclaim, nor as injurious as has been asserted by some practitioners.

As to purgatives, he says, that—

"In a disease characterized by an excessive fluxion to the mucous membrane, it appears to me irrational to promote this fluxion; and although the mode of irritation of cholera may be different from that of drastic purgatives, I believe it prudent to abstain from them until positive facts shall have unequivocally established their utility."

We should have some difficulty in believing that any physician should be so irrational as to recommend them, were there not the most positive testimony of the fact. The extraordinary mortality of the disease in those places where it is known that purgatives were recommended, furnishes a sufficient commentary on their use.

As to the proper drinks, M. C. remarks—

"A burning and unextinguishable thirst is one of the principal torments of patients, and in the immense majority of cases, they desire cold drinks. They revive at the sight of a fluid, and especially of a cold one. They devour pieces of ice, which they are told to allow to melt in their mouth, and we cannot relate all the service that ice has rendered in this disease. However, in the stage of asphyxia I have had recourse to very warm drinks, as tea or coffee, and it has appeared to me that reäction more promptly occurred than when iced drinks were given.

"Is it proper to allow the patient to satisfy his thirst, or is it better to allow him drink only in very small quantities at a time? This question is still in dispute. In general, drinking too copiously has appeared to me to promote vomiting. However, several practitioners have doubted the necessity of making patients suffer thirst; and hope by allowing them to drink abundantly, to repair the excessive depredation of liquids produced by the alvine evacuations. This idea deserves attention."

When the vomiting is obstinate, M. C. has found iced Seltzer water eminently useful.

During the period of concentration he thinks that very warm enemata should be preferred to cold ones; and they should be renewed every halfhour, hour, or two hours according to circumstances. When the discharges from the bowels are excessive, iced enemata have been he says very useful. He often alternates the hot and cold enemata, and adheres to one or the other according to their effects; and almost always adds to them a few drops of laudanum or of theriac or diascordium.

M. Cruveilhier thinks that it is to be regretted that the effects of the application of remedies to the respiratory mucous membrane have not been more fully tested; at present we have little however positive in favour of such applications.

Blood-letting so much lauded by the Indian writers, was tried by M. C. in every case of cholera asphyxia which he treated, but he found what has happened to every one else, that in the period of concentration it is impossible to get any blood. He has never tried arteriotomy, but he has known the brachial artery to be severed, and only a few spoonfuls of blood to be obtained. After bleeding M. C. constantly employed leeches to the epigastrium, along the sternum, and upon the sides; and after they had fallen off, he promoted the bleeding by cups.

The desperate state of the patient alone M. C. considers to justify recourse to venous injection, and that it cannot be admitted among the resources of our art, until numerous and positive facts shall have proved that it does not endanger the life of the patient.

At the commencement of the period of reäction, M. C. considers bleeding as contra-indicated, and that it is only proper when the reäction is complete, the perspiration has ceased, and there are symptoms of congestion of some organ. If too early resorted to, it will arrest reäction, and the patient will fall again into collapse, which will quickly be followed by death. Leeches are not attended with the inconvenience of bleeding, but they must not be abused: reäction the conservative effort of nature should be directed and not stopped. Leeches are extremely useful, applied to the epigastrium, to diminish oppression and distress; and applied to the mastoid apophyses in relieving the congestion of the brain.

Baths which M. C. proscribes in the stage of asphyxia, in this he considers of great utility; also cold affusions to the head. When the face is flushed, vinegar and water, or a bladder of cold water, should be applied to the forehead, and cataplasms to the extremities.

Hiccough and obstinate vomiting M. C. does not think alarming symptoms; they yield sooner or later to proper treatment. He recommends ice, or cold water to be held in the mouth, ice to be applied to the epigastrium, the ammoniacal ointment to the same region, or rather baths and leeches.

The epigastric distress, the feeling of a load at the scrobiculus cordis, should be treated by the same remedies, and by a blister to the back, by sedative frictions upon the painful parts, &c.

"Too often, however, we cannot preserve life; the exhausted system reacts incompletely; or indeed the reæction determines the inflammation to different points, which can bring on death, either in the acute or chronic stage; hence the necessity of using internal stimulants and emetics with the greatest caution. At other times the patient dies in the stupor, and in the typhoid stage; and more than one practitioner has repented of having used opium in too strong a dose during the period of asphyxia. We should never forget that the system, insensible to the most energetic therapeutic means, when a considerable disorder exists, is to the greatest degree influenced by them, when symptoms of reæction are manifested."

During convalescence, the strictest attention should be paid to the diet; many convalescents have become victims to neglect of this. It is impossible here to enter into the consideration of the diet suitable to all cases. It should be kept in mind that cholera is an irritation of the gastro-intestinal canal, and the diet should be that best suited to similar cases; that is, of the lightest and most easily digestible kind, and taken in small quantities at a time.